

USSN: 10/810,069

Docket No.: 55752US018

Amendments to the Claims

Please amend claims 2, 4, 5, 7, 8, 17, 18, 27, 32, 43-47, 50, 51, 56 and 66 as shown below in marked form:

Claim 1 cancelled.

2. (currently amended): A process for coating a moving web substrate ~~of indefinite length~~ passing from an unwind reel to a takeup reel comprising conveying the substrate past a coating applicator and from the coating applicator to and through a dryer or curing station in a close-coupled enclosure or series of close-coupled enclosures while supplying the enclosure or series of enclosures with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure.
3. (previously presented): A process according to claim 2 comprising conveying the substrate from the coating applicator through the dryer and curing station in a close-coupled enclosure or series of close-coupled enclosures.
4. (currently amended): A process for coating a moving web substrate ~~of indefinite length~~ passing from an unwind reel to a takeup reel comprising conveying the substrate in a close-coupled enclosure or series of close-coupled enclosures from a pre-coating station to a coating applicator, and past the coating applicator to a dryer or curing station in a close-coupled enclosure or series of interconnected close-coupled enclosures while supplying the enclosure or series of enclosures with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure.
5. (currently amended): A process for coating a moving web substrate ~~of indefinite length~~ passing from an unwind reel to a takeup reel comprising conveying the substrate in a close-coupled enclosure or series of close-coupled enclosures from a pre-coating station past a coating applicator and to and through a dryer or curing station while supplying the enclosure or series of enclosures with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure.

USSN: 10/810,069

Docket No.: 55752US018

6. (previously presented): A process for coating a moving substrate of indefinite length comprising conveying the substrate in a close-coupled enclosure or series of close-coupled enclosures from a cabinet containing an unwind reel, past a coating applicator, to a dryer or curing station and to a cabinet containing a takeup reel while supplying the enclosure or series of enclosures with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure.

7. (currently amended): A process for coating a moving web substrate ~~of indefinite length~~ passing from an unwind reel to a takeup reel comprising conveying the substrate past a coating applicator and to a dryer or curing station in a close-coupled enclosure or series of interconnected close-coupled enclosures while supplying the enclosure or series of enclosures with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, coating the substrate and protecting it from particulate contamination until the coating can solidify.

8. (currently amended): A process for coating a moving web substrate ~~of indefinite length~~ passing from an unwind reel to a takeup reel comprising conveying the substrate past a coating applicator and to a dryer or curing station in a close-coupled enclosure or series of interconnected close-coupled enclosures while supplying the enclosure or series of enclosures with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, coating the substrate and not exposing it to ambient air from at least the time the coating is applied until the coating solidifies.

Claims 9-16 cancelled.

USSN: 10/810.069

Docket No.: 55752US018

17. (currently amended): A process for coating a moving web substrate of ~~indefinite length~~ passing from an unwind reel to a takeup reel comprising conveying the substrate past a coating applicator and to a dryer or curing station in a close-coupled enclosure or series of interconnected close-coupled enclosures while supplying the enclosure or series of enclosures with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, and further comprising connecting first and second enclosures having a material difference in their respective operating pressures via a close-coupled enclosure comprising a transition zone.

18. (currently amended): A process ~~according to claim 17~~ for coating a moving substrate of indefinite length comprising conveying the substrate past a coating applicator and to a dryer or curing station in a close-coupled enclosure or series of interconnected close-coupled enclosures while supplying the enclosure or series of enclosures with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, and further comprising connecting first and second enclosures having a material difference in their respective operating pressures via a close-coupled enclosure comprising a transition zone, wherein the first enclosure comprises a close-coupled enclosure, the second enclosure comprises an oven and there is a ten-fold or greater pressure difference between atmospheres in the first and second enclosures.

19. (previously presented): A process for coating a moving substrate of indefinite length comprising conveying the substrate past a coating applicator and to a dryer or curing station in a close-coupled enclosure or series of interconnected close-coupled enclosures while supplying the enclosure or series of enclosures with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, wherein the total of the average headspace and average footspace in a close-coupled enclosure is 10 cm or less.

20. (previously presented): A process according to claim 19 wherein the total of the average headspace and average footspace in a close-coupled enclosure is 5 cm or less.

USSN: 10/810,069

Docket No.: 55752US018

21. (previously presented): A process according to claim 19 wherein the total of the average headspace and average footspace in any close-coupled enclosure is 3 cm or less.

Claim 22 cancelled.

23. (previously presented): A process for coating a moving substrate of indefinite length comprising conveying the substrate past a coating applicator and to a dryer or curing station in a close-coupled enclosure or series of interconnected close-coupled enclosures while supplying the enclosure or series of enclosures with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, wherein a first chamber having a gas introduction device is positioned near a control surface, a second chamber having a gas withdrawal device is positioned near the control surface, the control surface and first and second chambers together define a region wherein adjacent gas phases possess an amount of mass, at least a portion of the mass from the adjacent gas phases is transported through the gas withdrawal device by inducing a flow through the region, and the mass flow can be segmented into the following components:

M1 means total net time-average mass flow per unit of substrate width into or out of the region resulting from pressure gradients,

M1' means the total net time-average mass flow of a gas per unit width into the region through the first chamber from the gas introduction device,

M2 means the time-average mass flow of conditioned gas per unit width from or into the at least one major surface of the substrate or coating into or from the region,

M3 means total net time-average mass flow per unit width into the region resulting from motion of the material, and

M4 means time-average rate of mass transport through the gas withdrawal device per unit width,

wherein **M1** has a value less than zero and greater than -0.25 kg/second/meter.

USSN: 10/810.069

Docket No.: 55752US018

24. (previously presented): A process according to claim 23 wherein M1 has a value less than zero and greater than -0.10 kg/second/meter.

Claims 25-26 cancelled.

27. (currently amended): An apparatus for coating a moving web substrate ~~of indefinite length~~ passing from an unwind reel to a takeup reel comprising a coating applicator, dryer or curing station and substrate-handling equipment for conveying the substrate past the coating applicator and through the dryer or curing station, the substrate being enveloped from at least the coating applicator to the dryer or curing station in a close-coupled enclosure or series of close-coupled enclosures supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure.

28. (original): An apparatus according to claim 27 wherein the substrate is enveloped from the coating applicator through the dryer or curing station in a close-coupled enclosure or series of close-coupled enclosures.

29. (original): An apparatus according to claim 27 wherein the substrate is enveloped from the coating applicator through the dryer and curing station in a close-coupled enclosure or series of close-coupled enclosures.

30. (original): An apparatus according to claim 27 wherein the substrate is enveloped in a close-coupled enclosure or series of close-coupled enclosures from a pre-coating station to the coating applicator.

31. (original): An apparatus according to claim 27 wherein the substrate is enveloped in a close-coupled enclosure or series of close-coupled enclosures from a pre-coating station through the dryer or curing station.

USSN: 10/810,069

Docket No.: 55752US018

32. (currently amended): An apparatus ~~according to claim 27~~ for coating a moving substrate of indefinite length comprising a coating applicator, dryer or curing station and substrate-handling equipment for conveying the substrate past the coating applicator and through the dryer or curing station, the substrate being enveloped from at least the coating applicator to the dryer or curing station in a close-coupled enclosure or series of close-coupled enclosures supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, wherein the substrate is enveloped in a close-coupled enclosure or series of close-coupled enclosures from a cabinet containing ~~an unwind~~ the unwind reel to a cabinet containing ~~a takeup~~ the takeup reel.

33. (original): An apparatus according to claim 27 wherein an unsolidified coating on the substrate is protected from particulate contamination until the coating can solidify.

34. (original): An apparatus according to claim 27 wherein the substrate is coated and not exposed to ambient air from at least the time the coating is applied until the coating solidifies.

35. (original): An apparatus according to claim 27 wherein at least two close-coupled enclosures have different average headspaces or average footspaces.

36. (original): An apparatus according to claim 27 wherein a conditioned gas stream is supplied to at least the first in a series of interconnected close-coupled enclosures and the conditioned gas is carried along with the moving substrate to a downstream close-coupled enclosure or pushed to an upstream enclosure or process.

37. (original): An apparatus according to claim 27 wherein conditioned gas streams are supplied to a plurality of close-coupled enclosures and gas streams are withdrawn from a plurality of close-coupled enclosures.

38. (original): An apparatus according to claim 27 wherein conditioned gas streams are supplied to each in a series of interconnected close-coupled enclosures.

USSN: 10/810,069

Docket No.: 55752US018

39. (original): An apparatus according to claim 27 having seals with respect to the moving substrate at the upstream and downstream ends of a series of interconnected close-coupled enclosure.

40. (original): An apparatus according to claim 27 wherein a close-coupled enclosure has a pressure gradient of at least about -0.5 Pa or higher.

41. (original): An apparatus according to claim 27 wherein a close-coupled enclosure has a positive pressure gradient.

42. (original): An apparatus according to claim 27 comprising first and second enclosures having a material difference in their respective operating pressures connected by a close-coupled enclosure comprising a transition zone between the first and second enclosures.

43. (currently amended): An apparatus according to claim 42 for coating a moving substrate of indefinite length comprising a coating applicator, dryer or curing station and substrate-handling equipment for conveying the substrate past the coating applicator and through the dryer or curing station, the substrate being enveloped from at least the coating applicator to the dryer or curing station in a close-coupled enclosure or series of close-coupled enclosures supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, the apparatus comprising first and second enclosures having a material difference in their respective operating pressures connected by a close-coupled enclosure comprising a transition zone between the first and second enclosures, wherein the first enclosure comprises a close-coupled enclosure, the second enclosure comprises an oven and there is a ten-fold or greater pressure difference between atmospheres in the first and second enclosures.

USSN: 10/810.069

Docket No.: 55752US018

44. (currently amended): An apparatus according to ~~claim 27~~ for coating a moving substrate of indefinite length comprising a coating applicator, dryer or curing station and substrate-handling equipment for conveying the substrate past the coating applicator and through the dryer or curing station, the substrate being enveloped from at least the coating applicator to the dryer or curing station in a close-coupled enclosure or series of close-coupled enclosures supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, wherein the total of the average headspace and average footspace in a close-coupled enclosure is 10 cm or less.

45. (currently amended): An apparatus according to ~~claim 27~~ claim 44 wherein the total of the average headspace and average footspace in a close-coupled enclosure is 5 cm or less.

46. (currently amended): An apparatus according to ~~claim 27~~ claim 44 wherein the total of the average headspace and average footspace in any close-coupled enclosure is 3 cm or less.

USSN: 10/810,069

Docket No.: 55752US018

47. (currently amended): An apparatus according to claim 27 for coating a moving substrate of indefinite length comprising a coating applicator, dryer or curing station and substrate-handling equipment for conveying the substrate past the coating applicator and through the dryer or curing station, the substrate being enveloped from at least the coating applicator to the dryer or curing station in a close-coupled enclosure or series of close-coupled enclosures supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, wherein a first chamber having a gas introduction device is positioned near a control surface, a second chamber having a gas withdrawal device is positioned near the control surface, the control surface and first and second chambers together define a region wherein adjacent gas phases possess an amount of mass, at least a portion of the mass from the adjacent gas phases can be transported through the gas withdrawal device by inducing a flow through the region, and the mass flow can be segmented into the following components:

M1 means total net time-average mass flow per unit of substrate width into or out of the region resulting from pressure gradients,

M1' means the total net time-average mass flow of a gas per unit width into the region through the first chamber from the gas introduction device,

M2 means the time-average mass flow of conditioned gas per unit width from or into the at least one major surface of the substrate or coating into or from the region,

M3 means total net time-average mass flow per unit width into the region resulting from motion of the material, and

M4 means time-average rate of mass transport through the gas withdrawal device per unit width.

48. (original): An apparatus according to claim 47 wherein M1 has a value less than zero and greater than -0.25 kg/second/meter.

49. (original): An apparatus according to claim 47 wherein M1 has a value less than zero and greater than -0.10 kg/second/meter.

USSN: 10/810,069

Docket No.: 55752US018

50. (currently amended): An apparatus ~~according to claim 27~~ for coating a moving substrate of indefinite length comprising a coating applicator, dryer or curing station and substrate-handling equipment for conveying the substrate past the coating applicator and through the dryer or curing station, the substrate being enveloped from at least the coating applicator to the dryer or curing station in a close-coupled enclosure or series of close-coupled enclosures supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, wherein a stream of conditioned gas flows at a rate sufficient to reduce a close-coupled enclosure particle count by 75% or more.

51. (currently amended): An apparatus according to ~~claim 27~~ claim 50 wherein the streams of conditioned gas flow at a rate sufficient to reduce the close-coupled enclosure particle counts by 90% or more.

Claims 52-55 cancelled.

56. (currently amended): An apparatus ~~according to claim 27~~ for coating a moving substrate of indefinite length comprising a coating applicator, dryer or curing station and substrate-handling equipment for conveying the substrate past the coating applicator and through the dryer or curing station, the substrate being enveloped from at least the coating applicator to the dryer or curing station in a close-coupled enclosure or series of close-coupled enclosures supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, wherein an enclosure or series of enclosures is supplied with one or more streams of conditioned gas distributed at a substantially uniform rate across the substrate width.

57. (previously presented): An apparatus according to claim 56 wherein the distributed streams of gas do not disturb the coating sufficiently to cause mottle or other defects.

Claims 58-61 cancelled.

62. (previously presented): An apparatus according to claim 51 wherein the total of the average headspace and average footspace in any close-coupled enclosure is 10 cm or less.

USSN: 10/810,069

Docket No.: 55752US018

63. (previously presented): An apparatus according to claim 51 wherein the total of the average headspace and average footspace in any close-coupled enclosure is 3 cm or less.
64. (previously presented): An apparatus according to claim 51 wherein the total of the average headspace and average footspace in any close-coupled enclosure is 2 cm or less.
65. (previously presented): An apparatus according to claim 51 wherein the total of the average headspace and average footspace in any close-coupled enclosure is 1.5 cm or less.
66. (currently amended): A process according to claim 2 for coating a moving substrate of indefinite length comprising conveying the substrate past a coating applicator and from the coating applicator to and through a dryer or curing station in a close-coupled enclosure or series of close-coupled enclosures while supplying the enclosure or series of enclosures with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in a close-coupled enclosure, comprising flowing streams of conditioned gas at rates sufficient to reduce the close-coupled enclosure particle counts by 90% or more and wherein the total of the average headspace and average footspace in any close-coupled enclosure is 10 cm or less.
67. (previously presented): A process according to claim 66 wherein the total of the average headspace and average footspace in any close-coupled enclosure is 3 cm or less.
68. (previously presented): A process according to claim 66 wherein the total of the average headspace and average footspace in any close-coupled enclosure is 2 cm or less.
69. (previously presented): A process according to claim 66 wherein the total of the average headspace and average footspace in any close-coupled enclosure is 1.5 cm or less.